

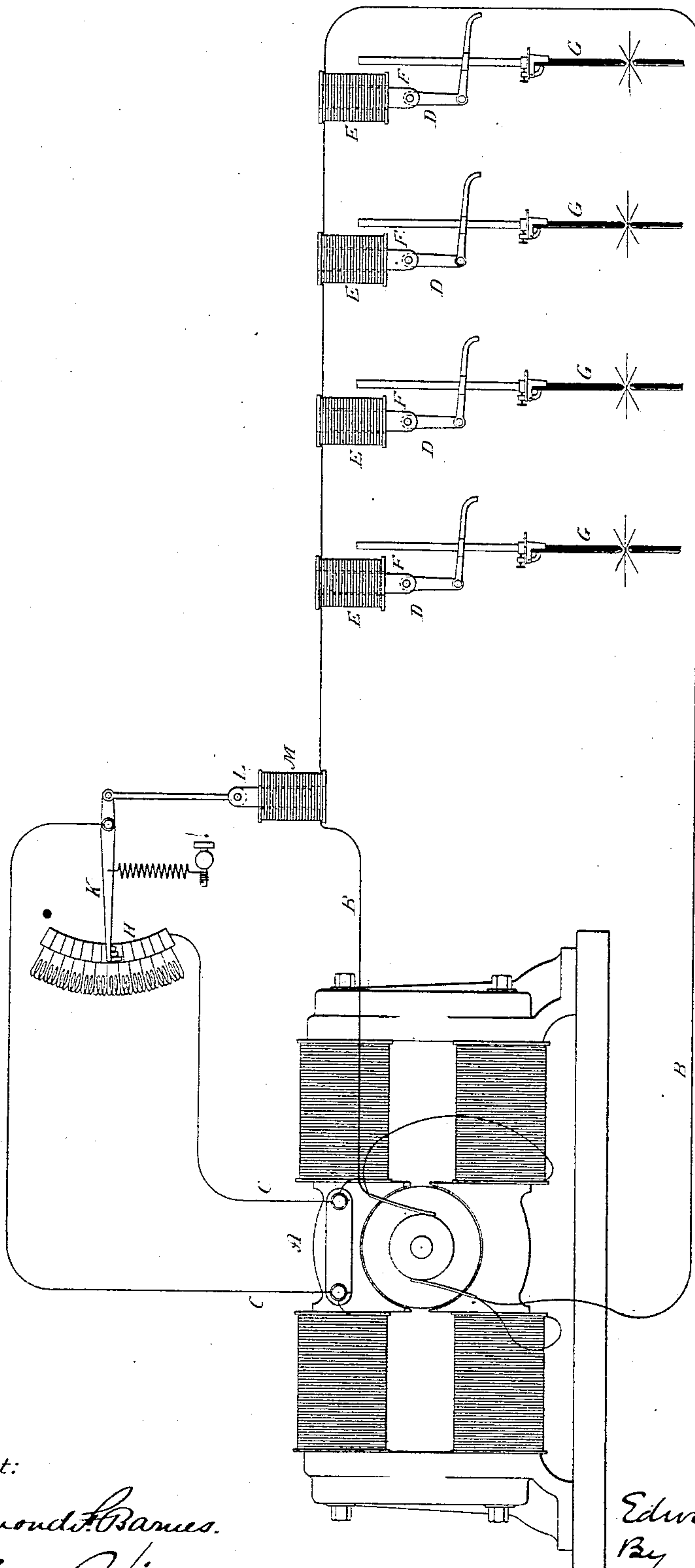
(No Model.)

E. WESTON.

REGULATOR FOR DYNAMO ELECTRIC MACHINES.

No. 292,715.

Patented Jan. 29, 1884.



Attest:

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UNITED STATES PATENT OFFICE.

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REGULATOR FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 292,715, dated January 29, 1884.

Application filed July 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WESTON, a subject of the Queen of Great Britain, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Regulators for Dynamo-Electric Machines, of which the following is a specification.

My present invention relates more particularly to a system shown and described in a patent granted to me May 29, 1883, No. 278,640, and is an improvement on said system, though, as will be hereinafter explained, it is capable of more general application. In the patent referred to is illustrated a regulator for arc-light or other similar systems, comprising an electro-magnet in the main circuit and in series with the lamps or other devices, and through the instrumentality of which the resistance of the derived field-circuit of the generator is varied in such manner as to maintain a constant flow of current in the main or armature circuit. I have found in this system, and generally when the regulating magnet or magnets is in circuit with other electro-magnetic translating devices which are operated by the current, that a certain relation between the regulating-magnets and those of the translating devices must exist in order to secure a perfect regulation of the system in which they are used—that is to say, the regulating-magnets and those of the translating devices must all be of like construction or capacity, so that all are equally and similarly affected by the current. These relations, so far as I am aware, have heretofore been so far disregarded as to render unattainable or impracticable an accurate system of regulation. The reason of this is that when in an arc-circuit a regulating-magnet of larger size and greater power than the lamp-magnets is employed, the regulation is retarded, owing to the action of the regulating-magnet being more sluggish than that of the others. On the contrary, when a regulating-magnet of greater sensitiveness than the lamp-magnets is used, the regulation is equally imperfect, for the reason that the regulator responds to fluctuations of current not sufficiently great to affect the lamps. The same obsta-

cles to securing a balance, or, in other words, the proper regulation of the current, exist when the regulating and lamp magnets work under different conditions, as when the load on the former is greater or less than that on the latter. I have overcome these difficulties, as stated above, by using a magnet or magnets for the regulator which, on the occurrence of fluctuations in the current strength, acts or responds to such fluctuations with the same degree of sensitiveness or in the same manner as the lamp-magnets. In this my invention is comprised. To secure a similar action of the regulator and other magnets, I use in all the same mass of magnetic metal, make the coils of the same resistance and number of turns, and observe whatever other well-known conditions of similarity in shape or construction may be necessary. I also construct or adjust the regulator so that the load imposed on the magnet by the parts moved thereby shall be the same as that on any one of the lamp-magnets. These results may be attained in many ways and by magnets of various kinds.

In illustration of the invention, reference is had to the accompanying drawing, which is a diagram of an arc system.

A represents the dynamo-machine, B the armature or main circuit, and C the derived field-circuit.

D D are arbitrary representations of arc-lamps, of which the main or regulating magnets are designated by the letters E, the armatures or cores by F, and the carbons by G.

In the field-circuit C is a variable resistance or rheostat, H, and a contact-lever, K. The latter is connected to and controlled as to position by the core L of an electro-magnet, M, included in series with the lamps, the arrangement being such that an increase of current in the circuit B draws down core L and interposes a greater resistance in the field-circuit of the machine, and conversely. Magnets M and E E are all alike, and the load on each is the same, this feature being illustrated in the drawing by making them all of the same size.

Though specially applicable to the system described, it is evident that the invention is equally applicable to any system in which a

regulating-magnet in circuit with others controls, either directly or indirectly, the current flowing through the circuit.

It is also obvious that the specific character of the magnets, the lamps, or the regulating mechanism may be greatly varied. Without, therefore, confining myself to details of mechanism, or relinquishing the right to make subject of other applications features of novelty herein shown or described but not claimed,

What I now claim as my invention is—

1. The combination in and with an electric circuit of electro-magnetic devices for utilizing and for regulating the current flowing, the electro-magnets of the said devices being of like construction or capacity, whereby all are equally and similarly affected by the current, as and for the purpose specified.

2. The combination of a generator, a circuit from the same, an electro-magnetic regulator, and electro-magnetic translating devices included in and operated by said circuit, the magnet or magnets of the regulator and those of the translating devices being of like construction or capacity, whereby all are equally and similarly affected by the current, as and for the purpose specified.

3. The combination of a generator, a main circuit, electro-magnetic devices included therein in series, a derived field-circuit, devices for varying the current flowing through the derived field-circuit, and an electro-magnet in the main circuit for controlling the said devices, the magnet being of the same construction or capacity as those of the other devices in the circuit, whereby all are equally and similarly affected by the current, for the purpose specified.

4. The combination of a generator, a main circuit, electro-magnetic devices included therein in series, a derived field-circuit, a variable resistance therein, and an electro-magnet in the main circuit for varying the resistance of the field-circuit, the said magnet being of the same construction or capacity as those of the other devices in the circuit, whereby all are equally and similarly affected by the current, as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 29th day of June, 1883.

EDWARD WESTON.

Witnesses:

H. A. BECKMEYER,
L. V. E. INNES.